

DOCKET NO.: 216450US0DIV

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

IN RE APPLICATION OF :  
KENICHI HINO : ATTN: APPLICATION DIVISION  
SERIAL NO: NEW U.S. APPLICATION :  
FILED: HERewith :  
FOR: BONDING COMPOSITION

**PRELIMINARY AMENDMENT**

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231

SIR:

Prior to examination on the merits please amend the above-identified application as follows.

**IN THE CLAIMS**

Please cancel Claim 19 without prejudice.

Please amend the Claims as follows:

1. (Amended) A bonding composition for tooth tissue, comprising:

a mixture of a polymerizable compound having acid group,

a water-soluble film-forming agent,

a form-retaining agent,

water, and

a curing agent;

wherein a calcium salt formed from said polymerizable compound having an acid group is insoluble in water;

wherein said film-forming agent is a polymerizable compound; and

wherein said film-forming agent is miscible with a physiological saline solution.

20. The bonding composition according to Claim 1, wherein said form-retaining agent is selected from the group consisting of a sand balloon, a glass balloon, a short glass fiber, a pieces of hollow glass fiber, a glass bead, glass powder, powder of a natural mineral, beads of a cross linked polymer, flakes of a cross linked polymer and an organic/inorganic composite material containing a cross linked polymer.

21. The bonding composition according to Claim 1, wherein said form-retaining agent is a particle.

23. The bonding composition according to Claim 1, wherein said form-retaining agent is a cross-linked polymer particle.

24. The bonding composition according to Claim 1, wherein an amount of said form-retaining agent is between 0.5 and 20% by weight per 100% by weight of said bonding composition.

#### **BASIS FOR THE AMENDMENT**

Claim 19 has been canceled.

Claim 1 has been amended to include the limitation of Claim 19.

No new matter is believed to have been added by entry of this amendment. Entry and favorable reconsideration are respectfully requested.

Upon entry of this amendment Claims 1-18 and 20-26 will now be active in this application.

### REMARKS

The claims were rejected in the parent application, Serial No.: 09/571,272 under 35 U.S.C. §102(b) over U.S. 5,264,513; and under 35 U.S.C. §103(a) over U.S. 5,264,513, in view of U.S. 5, 321,053; U.S. 5,554,665; U.S. 5,859,089 or U.S. 6,051,626.

Amended Claim 1 relates to a bonding composition for tooth tissue, comprising:

a mixture of a polymerizable compound having acid group,

a water-soluble film-forming agent,

a form-retaining agent,

water, and

a curing agent;

wherein a calcium salt formed from said polymerizable compound having an acid group is insoluble in water;

wherein said film-forming agent is a polymerizable compound; and

wherein said film-forming agent is miscible with a physiological saline solution.

The additional form-retaining agent gives the claimed bonding composition increased bonding strength and more stable bonding durability (see Examples 7 to 10, 11 to 15 etc. of the specification).

U.S. 5,264,513 disclose a primer composition which does not contain a form-retaining agent as required by the present invention. U.S. 5,264,513 fails to disclose or suggest to add a form-retaining agent to a bonding composition for the purpose of having more increased bonding strength and more stable bonding durability. Thus, the present invention is neither anticipated by nor obvious over U.S. 5,264,513.

In addition, U.S. 5, 321,053; U.S. 5,554,665; U.S. 5,859,089 and U.S. 6,051,626 fail to disclose water in their compositions. Specifically, the dental composition of U.S. 5,

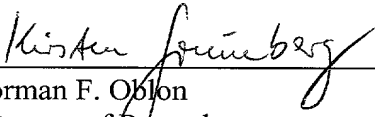
321,053, the adhesive composition for dental or surgical treatment of U.S. 6,051,626, the dental restorative compositions of U.S. 5,859,089 and the dental products of U.S. 5,554,665 don't contain water which is an ingredient of the present binding composition. However, water helps ensuring the bonding ability (present application, page 14, lines 22 to 23). This is illustrated by a comparison of Example 5 and Comparative Example 11 in which water was omitted. In Example 5, a bonding strength of 18.6 and a bonding durability of 15.8 MPa was achieved. When water is omitted, the bonding strength is only 9.0 and the bonding durability 3.6 MPa. Thus, the bonding ability of the composition according to the present invention is clearly superior.

Furthermore, these references do not teach to add a form-retaining agent to a bonding composition for the purpose of having more increased bonding strength and more stable bonding durability. Thus, the present invention is neither anticipated by nor obvious over U.S. 5,264,513, in view of U.S. 5, 321,053; U.S. 5,554,665; U.S. 5,859,089 or U.S. 6,051,626.

Applicants submit that the present application is now in condition for examination on the merits and early notice of such action is earnestly solicited.

Respectfully submitted,

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**IN THE CLAIMS**

19. (Cancelled).

--1. (Amended) A bonding composition for tooth tissue, comprising:

a mixture of a polymerizable compound having acid group,

a water-soluble film-forming agent,

a form-retaining agent.

water, and

a curing agent;

wherein a calcium salt formed from said polymerizable compound having an acid group is insoluble in water;

wherein said film-forming agent is a polymerizable compound; and

wherein said film-forming agent is miscible with a physiological saline solution.

20. (Amended) The bonding composition according to Claim [19] 1, wherein said form-retaining agent is selected from the group consisting of a sand balloon, a glass balloon, a short glass fiber, a pieces of hollow glass fiber, a glass bead, glass powder, powder of a natural mineral, beads of a cross linked polymer, flakes of a cross linked polymer and an organic/inorganic composite material containing a cross linked polymer.

21. (Amended) The bonding composition according to Claim [19] 1, wherein said form-retaining agent is a particle.

23. (Amended) The bonding composition according to Claim [19] 1, wherein said form-retaining agent is a cross-linked polymer particle.

24. (Amended) The bonding composition according to Claim [19] 1, wherein an amount of said form-retaining agent is between 0.5 and 20% by weight per 100% by weight of said bonding composition.--